Final Visual Presentation
for the degree of
Master of Visual Arts

Visual
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Karen A. Patkau

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THE UNIVERSITY OF ALBERTA

Teaching Aids for Hearing-Impaired Children

by

Karen Patkau

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled:

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submitted by Karen Anne Patkau

in partial fulfilment of the requirements for the degree of Master of Visual Arts.



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Teaching Aids for Hearing-Impaired Children

Thesis

The intent of this thesis is to investigate design and illustration media for instructional purposes.

The thesis is concerned with the design and illustration of visuals suitable for hearing-impaired children. These children should have a limited development of language skills and be approximately eight to ten years old.

The project, "Picture-Sentence Games for Hearing-Impaired Children," specifically involves the design of materials for the introduction to and acquisition of complex sentence structures. The sentences being dealt with consist of simple-sentences and clauses joined by the conjunctions: WHEN, WHO/WHICH, IF, BECAUSE, AND BUT. The project is being presented in a picture and sentence game format made up of illustrated and printed material.

Basis of Project

The concept of the project is based on theories of language development presented in Sentences and Other Systems,[1] which outlines the curriculum used at the Rhode Island School for the Deaf. It is also based on conversations with teachers at the Alberta School for the Deaf, and Joan Trott its Educational Consultant.

Throughout the development of the project, Patricia Stevenson, a teacher from the Alberta School for the Deaf, was consulted. She suggested which conjunctions and kinds of sentences to use. She also allowed the project materials to be shown to her students at various stages of completion and have them play the game.

Background Information

Complex sentence structure and the need for language materials dealing with it are of special significance to this group of children. According to the theory of language acquisition presented in Sentences and Other Systems: A Language and Learning Curriculum for Hearing Impaired Children, the child of eight to ten years of age is going through a crucial period of language development. The understanding of complex sentence structures is of great importance.

During this period,

> "...the acquisition of complex sentence structures is both possible and necessary since the growth of complex syntax is inextricibly related to the growing complexity of the cognitive tasks confronted both in school and elsewhere."[2]

A nine year old child is expected to communicate and handle language in a much more elaborate way than a pre-schooler is. In order to explain his own actions or to relate events of the day, the child must have surprisingly complex semantic and syntactic abilities. Just as more involved social communication

is necessary so are more complex reading and writing skills. Without these skills and abilities communication breaks down.

The hearing-impaired child, by this time, should have a feeling for simple grammar in sentences and should have been exposed to more complex language. According to Sentences and Other Systems, he should have dealt with the simple verb conjunction "and" and infinitive noun phrase complements appearing in verb phrases (for example: Tom likes to eat candy). The child who can master those language concepts is ready for the syntactic complexity needed for functional language at a higher level of development.

In general the eight to ten year old hearing-impaired child is mentally progressing from the ordering of events to a more complex idea of space, time, and the relationship between cause and effect.

> "Questions of causality involving more than one event are introduced, with the ordering of events playing a greater role. Following the mastery of the relationship of events in a given context, the child may begin focusing on the attributes of things within the events, and during this period may even lose track of the events themselves."[3]

Through cognitive growth the child will be able

> "...to handle both event and attribute in relation to each other, to the extent of understanding that often intrinsic, causal relationships exist between the attributes of people (characters in stories) and events that occur (plot)."[4]

The language work done in the classroom should reinforce the child's changes and developments.

The Edmonton teachers felt that material written for the children's level of language development was often too immature in content to keep their interest. Peter Blackwell even warns against the use of such material:

> "The need to find literature which is syntactically less complex may have serious consequences, for it may inhibit a major potential of literature within a curriculum, that is, helping readers make reasoned judgements. If the student is not only to learn to read, but also to learn from reading, the literature he encounters as an introduction to complexity must be in tune with his cognitive, psychological and social development."[5]

He also states that:

> "If syntactic ability, both receptive and expressive, limits a student's response to these types of demands then clearly the expansion of syntactic competence during this period must be one goal of a language development curriculum."[6]

The need is apparent for language materials dealing with complex sentence structures that are designed especially for this group of hearing-impaired children.

Rationale for Use of Illustrations with Sentences

That the use of illustration in conjunction with printed materials is important in the design of the project, is demonstrated by research done in the areas of visual learning processes for the deaf, and learning of languages and concepts in general.

In her Ph.D. dissertation, Visual Learning Processes in

Deaf Children,[7] Patricia Ann Scherer attempted to find the way in which vision is used most effectively in language acquisition. The primary objective of her study was the comparison of results of three different processes designed to teach reading to hearing-impaired children.

Fifty-four children ranging in age from six to ten years old were divided into three experimental groups. The teaching processes presented to the groups were all in the medium of programmed film. They included: Learning Situation A, in which information was given in the form of printed words, illustrated pictures, and a simultaneous presentation of the words being speechread ("speechread" meaning the gaining of understanding words from movements of a speaker's mouth); Learning Situation B, which had the same printed words and illustrated pictures; and Learning Situation C, in which the same printed words were shown with simultaneous speechreading.

The results all favoured Learning Situation A which included all three factors - the read word, the illustrated picture, and the speechread word, for learning that was most rapid and meaningful. From these she concluded that this situation possibly produced the amount of "input information" that is needed for effective learning.

It was found that Learning Situation C was generally more effective than Learning Situation B except in the case of eight year olds: their exception being of special significance in regard to this project.

> "The six-year-olds, not yet extensively exposed to reading, had not been influenced by the school procedures, while the ten-year-olds, having use of speechreading as their language input system, were better able to relate this form to reading. The eight-year-olds, however, less mature verbally and apparently sensitive to procedure, found it difficult to learn when two verbal cues were presented (Learning Situation C)."[8]

If the printed and speechread forms of the word were unknown to the child he had no other form of learning cue.

Therefore, for the purpose of this project, Scherer's research showed the significance of the use of the illustrated picture in teaching language to hearing-impaired children at a certain stage of development.

On a more general level of learning language with the use of illustration, Andrew Wright in Visual Materials for the Language Teacher states:

> "Semantic meaning and formal meaning are complex and not usually picked up in any significant way at the drop of a hat... the first grasp of the meaning of a new item is...the first step of a long and stony way to a firm grasp of meaning and an ability to use that language item productively. Visual materials are a source of help throughout this long process."[9]

He presents some empirical functions of visual materials used in teaching English as a second language. They could also be applied to the learning situation of the hearing-impaired child. They are as follows:

1. To motivate the student to want to speak,[10] read,[11] and write.[12]

Illustrations can help engage the child's interest in topics which he might then want to relate to others. They can prepare him for new experiences. By presenting scenes which the child would not otherwise encounter, illustrations can help develop a greater appreciation of and insight into the world around him.

Catherine M. Williams in Learning from Pictures states:

> "Pictures used as the basis for discussion encourage young people to think critically, observe carefully, and question intelligently."[13]

> "Well-selected pictures are excellent aids to speech correction. The child who needs exercises in speech may lose self-consciousness and actually enjoy identifying pictures of objects, composing suitable captions for pictures, or relating the story of a picture. Such pictures also add interest to exercises for children with speech and hearing problems."[14]

2. To create a context in which the student's speech[15] and written text[16] will have meaning.

A sequence of ilustrations that accompanies dialogue shows its significance and makes it seem more credible. This function is especially valuable to the child who is just starting to learn language.

3. To make him feel that what he is reading and the way he is reading it relates to the way which written text is used in real life.[17]

If the child finds that he views an illustration in the same way others do, he might realize that written text is another form of communication.

4. To provide the student with information to use and refer to in speaking[18] and writing[19] including objects, actions, events, and relationships.

The same illustrations which expose the child to new interests are informative. Also, at times it is more convenient to use illustrations to identify objects or actions than to actually show the objects or perform the actions.

5. To provide extra information over and above that given in the text, perhaps to make the general experience (of reading) more interesting by compensating for the limitation of the language.[20]

As discussed earlier, the hearing-impaired child's level of maturity and sophistication might be far above his level of language.

Captioned drawings, political cartoons, and advertisements are examples of very effective communication devices which stimulate reading.

6. To provide him with non-verbal cues for manipulation work[21] and practice.[22]

The illustrated material can provide different contexts for the item being taught. This is necessary when the child is ready for language manipulation in which changes are made in the sentence pattern. As representations and simulations of real situations in which language is to be manipulated, illustrations can be quite convincing.

7. To provide him with non-verbal prompts to written composition[23] and dialogue reproduction and invention.[24]

An illustration can act as a guideline in giving the child material to talk or write about. It can encourage him to interpret written material which it accompanies; to use the language he can manage; and aids in organizing ideas. It can also be used to cue other parts of sentences, or other sentences, to finish sentences and supply answers to questions.

An illustration can be uniquely suited to purposes of review and summary. For reproduction activities they can act as a reminder to the child of what sentence is to be reproduced. The same illustration which aided in initial learning can aid in recall and contribute even more to learning than it did at first. The child can incorporate his own ideas into the second viewing of an illustration.

8. To provide him with a clue to the meaning of detail[25] either by introducing him to the meaning for the first time or reminding him of it.[26]

Examples of this use of illustration can be seen in how-to-do situations. Here drawings and text are often used together to help demonstrate the significance of the text. The student can also refer to the illustration for clues to interpreting unfamiliar words.

9. To provide a clue to the meaning or gist of the written[27] or spoken[28] passage either by introducing him to the meaning for the first time or by reminding him of it.

The use of illustrations can help prevent misconceptions where concepts and terminology alone may not be clearly understood.

10. To provide him with material by which he can indicate non-verbally that he has understood.[29]

By choosing a certain picture, or correctly ordering a sequence of pictures the child can demonstrate what he actually comprehends.

In dealing with grammar, illustrations can be used:

11. To clarify the meaning of a grammatical point for the pupils and to draw their attention to the precise form of the language involved.[30]
12. In the making of general statements about grammar.[31]
13. To assist the pupils in their practice of the use of grammatical points.[32]

And in dealing with testing, illustrations can be used:

14. To avoid the use of text by the examiner in order that the student derive the answer from a selection of language from his memory.[33]
15. To reduce the number of decisions and actions involving language not directly relevant to the feature being tested, e.g. testing reading comprehension by indicating an appropriate picture instead of speaking or writing an answer which is a test of these skills as well as that of reading.[34]
16. To give a real context to the text without the provision of any specific information.[35]

The Edmonton teachers agreed that the use of illustration would be a definite incentive in getting the children interested in the material and that illustration was a very important factor in the explanation of any concept to the hearing-impaired child.

Pat Stevenson felt that complex sentences were more successfully explained to her students by illustration than by sign, writing, or demonstration.

Illustration can play many roles in the learning of language. The extent to which it makes an actual contribution depends upon the structure of the learning situation.

Rationale for Use of Game Format

The reason for presenting the material in game form was based on the Rhode Island theory that language structures are acquired, not taught. In other words, a student must gain possession of these structures through his own efforts rather than being presented with such knowledge. The process of language development at this level of complexity is no different than at an earlier level. It is an internalizing activity. The child must have a period of meaningful exposure to language structure if the language is to be useful in his reading comprehension and written and verbal production, and before he can understand any analysis or discussion of it.

Essentially, the game can be seen as a form of programmed learning (i.e. a teaching aid composed of a stimulus-response device providing information about solving a problem and giving

the student practice in making responses under conditions that are controlled to check whether learning has occurred).

Patricia Scherer states:

> "It has been hypothesized that when both information and response mechanisms are presented in a programmed manner, then learning effectively reaches its optimum."[36]

and that "Evans ... claims that pleasant and

> permanent programmed learning occurs when the student proceeds through the course by a number of small, easy-to-take steps. When the steps are small enough, even the student who knows little about the material can proceed through the program, making few errors with reinforcement. To make the steps small enough and to reduce the chance for errors, often a form of cueing is used. This cueing can take many forms: quotation marks, underlined words, colour cues and initial parts of the answer, are methods for fostering success."[37]

In the case of this game, cueing takes the form of the illustrated picture, initial parts of the answer, and words set in bold type.

By exposing students to sentence structures in the context of a unit of material, such as a series of picture-sentence games, the concept of these structures should be made more accessible and meaningful fo the children. The language used has a specific purpose and is a necessary part of an event. Because the sentence parts and the picture are given in the form of concrete, physical objects, the child is freed of the mechanical involvement in writing. He is encouraged to actually manipulate the words and pictures.

The teachers also felt that repetition and reinforcement, qualities inherent in a game that is designed to be used over

and over again, are essential in acquiring an understanding of sentence structures. They felt that by participating in the forming of the sentence structures the children would understand and remember the concepts more easily.

How "Picture-Sentence Games" Can Be Used

There are many ways to use the different sets of pictures and sentences. Rules for three different games have been provided. The instructor and/or children can invent other language games to play using the same materials.

If the children have not yet learned a certain conjunction used in the games, it can be left out and the rules changed. If the children are just beginning to learn conjunctions and are dealing only with BECAUSE, then only the BECAUSE pictures and sentences may be used.

The picture and sentence material can be used literally in game form or a more symbolic and abstract interpretation of it may be made. For example, the pictures, or pictures and sentences may be used as the basis of discussion, and of the writing of paragraphs and stories as suggested earlier in the paper.

Game Rules

It is suggested that the games be played under the supervision of an instructor who may be needed to check answers, and to explain rules and new vocabulary to the children.

Game I (for at least two players)

1. A set of five pictures is laid out in a row.

2. Without reading them, each player takes one principle and one subordinate clause card from the box.

3. In turn, each player reads out his clause cards and states whether or not a logical sentence has been made.

4. If a player has made a sentence he must try and find a picture from the row which it describes.

5. If the correct picture is found the player can keep it and the sentence. He may then take another turn.

6. If the sentence does not describe any picture in the set, the player must put the clause cards back in the box and take another turn choosing two new cards.

7. If a sentence is not made at all, the player must wait until his next turn. Then he can replace either one or both of the clause cards with new cards. He may then try to make a sentence which will match one of the pictures.

8. When a complete set of pictures and sentences have been matched, another set of pictures is laid out and the game continues.

9. The player that collects the most pictures and sentences wins.

Game II (for two to six teams of two players)

1. A set of five pictures is laid out in a row in front of each team of players.

2. One player gets the set of principle clause cards and the other player gets the set of subordinate clause cards that go with their set of pictures.

3. The player with the principle clause cards must read one out. The player with the subordinate clause cards must read out the one which makes the most sense as a sentence with the principle clause. Then the first player must match the sentence with the picture it describes.

4. After the first team completes its moves or makes a mistake (for example, an incorrect answer is made or a sentence is matched to the wrong picture) the next team takes a turn.

5. When a team finishes matching its set of pictures and sentences, another set is laid out and the game continues.

6. Either the team to finish the most sets wins or, if there is only one set per team, the first team to finish wins.

Game III (for three or four players)

1. A set of five pictures with their five principle clause cards are laid in a row in front of each player.

2. Without reading them, each player takes five subordinate clause cards from the box.

3. The starting player asks any other player if he has a subordinate clause card beginning with a particular one of the conjunctions: WHEN, WHO/WHICH, IF, BECAUSE or BUT.

4. If the other player has one he must give the card to the player who asked for it.

5. If the asking player can make a sentence which matches a picture in his set he gets another turn. Again he can ask any other player for a subordinate clause card starting with a certain conjunction.

6. If the other player doesn't have one, the asking player must pick a subordinate clause card from the box without reading it. If any appropriate sentence can then be made he gets another turn. This continues until the asking player does not get a card he can use either from another player or from the box.

7. When a player has collected all five sentences for his set he can lay them down with the pictures and choose another set of pictures with their principle clause cards.

8. The player with the most sets of pictures and sentences wins.

The Children and the Game

The purpose of "Picture-Sentence Games" was to investigate illustration and design media for instructional purposes rather than to invent a new language teaching device.

The project was shown to Pat Stevenson's class of eight to ten year old children at the School for the Deaf in Edmonton. They had been learning the sentence structures used in the game throughout the year.

The children saw the project materials at several stages of development for the following reasons: to observe their reactions to the pictures, to see if they understood the sentences, and to see if they were able to follow the game rules. The success of the project on a learning level was not being determined at this stage.

At the first meeting, the children were shown some of the pictures. They liked them.

At the next meeting, the children were presented with half of the game. They were asked to write their own sentences about the pictures. For example, the picture with the sentence "The old lady ran away BECAUSE she saw a monster." was interpreted as: "One day an old woman walked and walked and suddenly saw a purple monster. She shouted and shouted. The purple monster liked to play with her but she did not like to play with it.

The children were then asked to put together sentences from a mixture of clause cards and match them with the correct pictures.

This was done with each set of pictures and sentences separately.

At the last meeting, the children played a version of Game I using one half of the final set of pictures and sentences. There were three players. They were able to follow the rules and seemed to enjoy the game. They tried to cheat.

The Film and the Book

In addition to "Picture-Sentence Games for Hearing-Impaired Children," there is another component of the thesis. It consists of an animated film and a book based on the film which illustrate compound and complex sentences for hearing-impaired children. The vocabulary used is more advanced and the sentence structures sometimes more complex than those used in the game. These materials would be suitable for slightly older children. These projects represent further media investigation and have yet to be tested formally.

Both the film and the book were designed and produced with Elise Johnson, who is also an M.V.A. Candidate at the University of Alberta.

Footnotes

[1] Peter M. Blackwell, Elizabeth Engen, Joseph E. Fischgrund, Christina Zarcadoolas, Sentences and Other Systems: A Language Curriculum for Hearing-Impaired Children, The Alexander Graham Bell Association for the Deaf, Inc., 1978.

[2] Ibid., p. 92.

[3] Ibid., p. 93.

[4] Ibid.

[5] Ibid., p. 107.

[6] Ibid., p. 92.

[7] Patricia Ann Scherer, Visual Learning Processes in Deaf Children, Ph.D. dissertation, Northwestern University, Evanston, Illinois, June, 1968.

[8] Ibid., p. 152.

[9] Andrew Wright, Designing for Visual Aids, London: Studio Vista, New York: Van Nostrand Reinhold Company, 1970, preface.

[10] Ibid., p. 14.

[11] Ibid., p. 31.

[12] Ibid., p. 38.

[13] Catherine Williams, Learning from Pictures, Washington: Department of Audiovisual Instruction, National Education Association, 1963, p. 12.

[14] Ibid., p. 74.

[15] Wright, Designing for Visual Aids, p. 14.

[16] Ibid., p. 38.

[17] Ibid., p. 31.

[18] Ibid., p. 14.

[19] Ibid., p. 38.

[20] Ibid., p. 31.

[21] Ibid., p. 14.

[22] Ibid., p. 38.

[23] Ibid.

[24] Ibid., p. 14.

[25] Ibid., p. 2.

[26] Ibid., p. 31.

[27] Ibid., p. 38.

[28] Ibid., p. 2.

[29] Ibid., p. 31.

[30] Ibid., p. 48.

[31] Ibid.

[32] Ibid.

[33] Ibid., p.53.

[34] Ibid.

[35] Ibid.

[36] Scherer, Visual Learning Processes, p. 28.

[37] Ibid., p. 21.

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Blackwell, Peter M., Engen, Elizabeth, Fischgrund, Joseph E., Zarcadoolas, Christina. Sentences and Other Systems: A Language Curriculum for Hearing-Impaired Children. The Alexander Graham Bell Association for the Deaf, Inc., 1st ed., 1978.

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Williams, Catherine M. Learning from Pictures. Department of Audiovisual Instruction, National Education Association, Washington D.C., 1963.

Wright, Andrew. Designing for Visual Aids. Studio Vista: London, Van Nostrand Reinhold Company: New York, 1970.

List of Slides

no.	description
1	project documentation panel
2	animated characters for book and film entitled "You can take the frog out of the swamp BUT you can't take the swamp out of the frog."
3	book cover
4 - 9	book interior
10	packaging for "Picture-Sentence Games"
11 - 40	series of illustrations for "Picture-Sentence Games"
11 - 15	boy and tadpole series: pastels, papers
16 - 20	animal series: pencil crayon, watercolours
21 - 25	purple monster series: chalk pastels
26 - 30	people series: charcoal
31 - 35	place series: magazines, zeroxes, papers
36 - 40	nature series: oil pastels